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ASSET MANAGEMENT

# Evaluating the Glidepath Design of Target Date Maturity Funds

By

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## Summary

- Key questions for plan sponsors and participants selecting a target date maturity fund are: how should one evaluate glidepaths? Which glidepath is most appropriate for the participants in my plan?
- The expected range of outcomes depends critically on assumptions about exogenous factors such as market returns, volatility and participant contribution patterns over the anticipated 40-year time horizon.
- Under a broad range of assumptions reviewed in the study, glidepath selection (whether it should be relatively aggressive or conservative) made a material difference in estimating participants' potential post retirement income. We found that the worst-case scenarios are the ones that highlight the risk/return tradeoffs facing investors. On the other hand, while the more aggressive glidepaths tend to outperform in the broad middle range of potential market outcomes, the differences between glidepaths are not as pronounced as in the worst-case scenarios.
- This study uses Monte Carlo simulations to illustrate the relationships and tradeoffs between glidepath design, input assumptions, and investment outcomes.
- Specific recommendations are beyond the scope of a focused study such as ours, which by necessity uses simplified glidepaths and arbitrary market assumptions. However, given the realities facing plan sponsors and participants, there are a number of reasons why we believe a consensus glidepath can be an appealing choice for the great majority of investors.

## Introduction

Target date maturity funds have become a popular option in 401(k) plans because they automatically adjust a fund's portfolio mix until it reaches its final allocation or target date. The distinctive feature of such funds is the "glidepath" that gradually migrates the portfolio from a relatively aggressive posture (heavier investment in stocks versus bonds) early in one's career to a more conservative posture as retirement approaches. Key questions for plan sponsors and participants are: how should one evaluate glidepaths? Which glidepath is most appropriate for the participants in my plan?

In light of the wide variation of glidepaths being offered, and the fact that a number of fund managers cite their glidepaths as a proprietary advantage, we believe that the subject is ripe for research. However, given the complexity of the relevant variables and assumptions, this study does not attempt to develop an optimal glidepath, or provide specific guidance as to the appropriate asset mix. Instead, we provide a framework for investors to understand the issues and tradeoffs.

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The market's historical returns provide only one observation of what might have happened, and provide little guidance as to what the future holds. We don't know what *will* be, but it is highly unlikely that the next 40 years will look exactly like the last.

Evaluating the glidepaths of target date funds is a difficult endeavor. For the most part, glidepaths reflect long-term asset allocation strategies, and are not adjusted for near-term shifts in expected returns and risks. As a result, comparing past performance is not an appropriate method to evaluate glidepaths.

For example, an aggressive glidepath that produced high returns and led the pack during the 1990s, would look much worse, and would likely be near the bottom of the universe at the end of 2008. Neither result is terribly relevant in deciding whether the aggressive glidepath is appropriate for the sponsor's participants. The choice of glidepath should reflect forward-looking views of returns and risks. The market's historical returns provide only one observation of what might have happened, and provide little guidance as to what the future holds. We don't know what *will* be, but it is highly unlikely that the next 40 years will look exactly like the last.

Thus, we believe that Monte Carlo simulations provide more helpful insights for glidepath comparison. The simulations can include the full range of potential market outcomes, and their probabilities. By combining this information with a glidepath, expected participant contribution patterns, and a view of risk aversion, sponsors can make informed choices about which glidepath may be more appropriate for their participants.

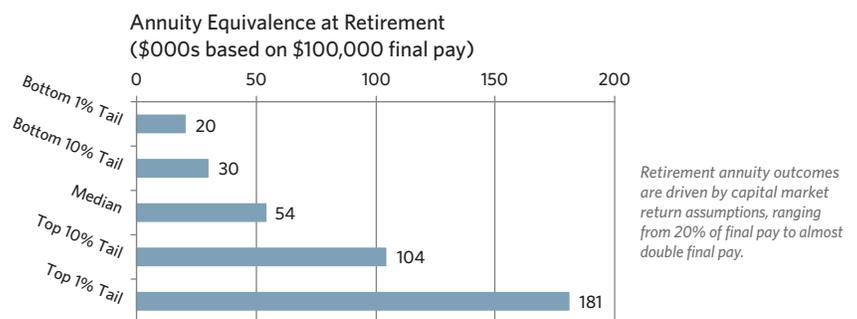
Our study performs one simulation for each combination of glidepath and design criteria. Each simulation includes 20,000 scenarios which represent potential 40-year stock and bond market trajectories. We compare the probability distribution of portfolio values at retirement date, based upon the 20,000 scenarios, to understand how each variable affects the results.

### Elements of Our Analysis

Following are the definitions of the elements that hold throughout our analysis:

**Glidepaths:** Today's glidepaths include multiple asset classes and asset subclasses, but for the sake of simplicity, this analysis uses only U.S. stocks and U.S. bonds. As a result, each point on the glidepath can be wholly described by its allocation to stocks. The "neutral" glidepath is the reference point throughout the analysis, and is highlighted as part of the base case in Exhibit 1.

**Exhibit 1: Base Case**



Source: Mellon Capital Management, July 2009

In our comparisons, rather than reporting the portfolio value at retirement, the outcomes are stated in terms of an annuity that could be purchased, expressed as a percentage of final pay.

It is a stylized version representing the approximate middle ground of glidepaths currently offered in the marketplace. It allocates 85% to stocks at fund inception and gradually declines over the next 40 years to 48% stocks at retirement. In our examples, we also consider an aggressive version that has a 10 percentage point higher allocation to stocks at each point along the glidepath, and a conservative version with allocations that are 10 percentage points less. These simplified glidepaths allow us to illustrate the fundamental relationships, which can logically be extended to more complex glidepaths.

**Capital market assumptions:** The base case results in Exhibit 1 are based on the assumptions that the stock market has an expected real (net of inflation) return of 5% per year and volatility<sup>1</sup> of 18%, the bond market has an expected real return of 2% and volatility of 4%, and the stock and bond markets are mildly correlated. These values serve as the parameters used to generate the 20,000 scenarios produced for each Monte Carlo simulation. In subsequent examples, we will evaluate the implications of higher and lower expected return and volatility assumptions.

**Participant contribution pattern:** The results in Exhibit 1 assume that we have a “model” participant. She joins the workforce at age 25, and consistently contributes 9% of monthly wages for the next 40 years, enjoying real wage growth through most of her career due to both GDP growth and career progression. In the last few years of her career, wages decrease slightly in real terms. In subsequent examples, we will also consider results for the “inconsistent contributor” and the “late starter.”

**Simulation process:** For the first month in the first scenario, we generate “random” stock and bond market returns based on the capital market assumptions. We repeat the process another 479 times in order to produce 480 months (40 years) of stock and bond market returns. Given a glidepath (evolution of the asset mix through time) and contribution pattern, we can calculate the ending portfolio value for this scenario. We repeat the process another 19,999 times, resulting in a probability distribution describing the likelihood of potential outcomes. Our statistics are based on these distributions. For the sake of clarity and ease of comparison, out of the 20,000 scenarios we focus only the median or “average” scenario, the 10th percentile “worst-case” and the 90th percentile “best-case” (except for the relatively simple Exhibit 1).<sup>2</sup> Note that the true worst case scenario — the bottom 1% — will be far below the 10th percentile scenario that we label as worst-case.

**The measure of outcomes — “annuity equivalence”:** In our comparisons, rather than reporting the portfolio value at retirement, the outcomes are stated in terms of an annuity that could be purchased, expressed as a percentage of final pay. Thus, for example, 50% annuity equivalence means the participant’s 401(k) balance at retirement can buy a 20-year annuity<sup>3</sup> that generates yearly income equivalent to 50% of final pay. For illustration, we assume a \$100,000 final salary, so the yearly income from a 50% annuity would be \$50,000.

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<sup>1</sup> Volatilities are expressed as standard deviation of annual returns.

<sup>2</sup> The worst-case scenarios can arise in one of two ways. Either the stock market will have experienced significantly sub-par returns over the participant’s entire career, or it may have experienced a dramatic bear market when the participant is nearing retirement. The situation is reversed in the best-case scenarios, in which case the markets will have provided much higher returns that would have been expected on average.

<sup>3</sup> A 20-year annuity was chosen based on the average actuarial life expectancy following retirement, and to avoid the complexities associated with the pricing of lifetime annuities.

Consider the outcomes from an aggressive glidepath. Investors need to weigh the value of the potential upside of higher income in retirement against the risk it represents — both the probability of lower income and potential severity.

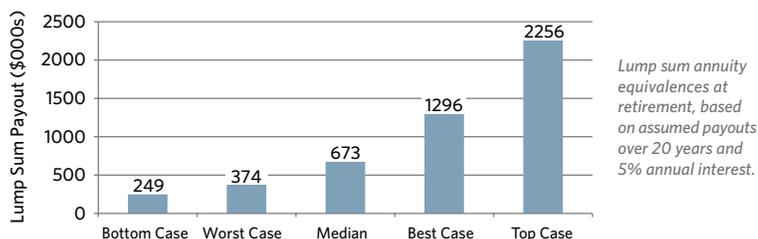
**Comparing glidepath outcomes:** Comparing glidepaths is difficult because there is no universally accepted metric. Some focus on a single statistic such as “the probability of success,” but we believe that it’s too simplistic. Instead, investors need to evaluate the entire probability distribution of potential outcomes. Consider for example, the outcomes from an aggressive glidepath. Investors need to weigh the value of the potential upside of higher income in retirement against the risk it represents – both the probability of lower income and potential severity. The formal term for quantifying the relationship between risk and return is the investor’s *utility function*. The tradeoff varies with each individual, making it difficult to generalize as to the preferred choice of glidepath. In order to give the reader a sense of the differences between distributions we display the median-, best-, and worst-case scenarios and crossover percentile.<sup>4</sup>

### Base Case Results

Armed with our base case assumptions, we establish the range of retirement income results faced by our model contributor (Exhibit 1). The median scenario offers an annuity equivalence of \$54,000 per year, based on \$100,000 final pay. In other words, half of the scenarios are expected to provide annual income of \$54,000 or less, and half provide more.

In terms of worst-case scenarios, the bottom 10% “tail” of the outcomes has an expected annuity equivalence of \$30,000 per year or less; the bottom 1% tail is at \$20,000 per year or less. This means that based on these capital market assumptions, a model participant who invests solely in a lifecycle fund utilizing the base case glidepath has a 10% chance that, upon retirement, the 401(k) balance will only be able to purchase an annuity that is at most \$30,000 per year. Further, there is a 1% chance that the annuity will be \$20,000 per year or less. On the other hand, if the retiree is fortunate and the capital markets provide better-than-expected performance during her career, the best 10% and 1% of potential scenarios will likely provide annuity equivalences of \$104,000 and \$181,000 per year, respectively.<sup>5</sup> For perspective, Exhibit 2 illustrates what the payouts would be if the 401(k) balances were taken as lump sums at retirement instead of as a stream of payments.

**Exhibit 2: Lump Sum Equivalences**



Source: Mellon Capital Management, July 2009

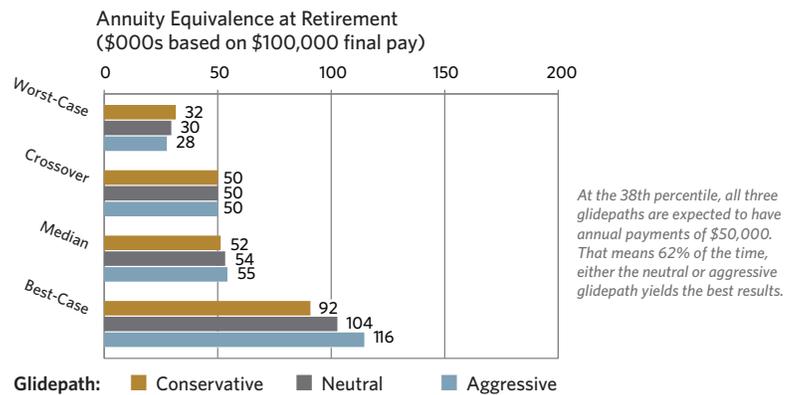
<sup>4</sup> Crossover percentile tells us the probability that the aggressive glidepath will outperform the conservative. Put another way, a crossover at the 30th percentile indicates that the conservative glidepath outperforms 30% of the time, and the aggressive, 70% of the time. While this is an interesting statistic, it is not sufficient to evaluate glidepaths. That is because it does not tell us how badly the aggressive glidepath might underperform in the scenarios in which the conservative glidepath does better.

<sup>5</sup> Whether the participant ends up in a middle, best or worst case scenario will be determined by market behavior over her career, which is the central variable beyond our control.

## What is “Enough” Retirement Income?

The median scenario in Exhibit 1 shows that our participant can expect to be able to purchase an annuity that provides yearly income of a little over half of final pay.<sup>6</sup> This reflects the simulation’s projections based on our base case capital market assumptions, for a “model” contributor who puts away 9% for an entire 40-year career. Often success is described as a result that can fund an annuity with a yearly income stream equivalent to 60% of final pay. This suggests that participants with a goal of yearly income that is closer to matching their final pay need to contribute more aggressively, have another income stream to supplement their retirement plan, or hope that our base case capital market assumptions are too conservative.

**Exhibit 3: Base Case with 3 Glidepaths**



Source: Mellon Capital Management, July 2009

## The Impact of Different Glidepaths

With the base case as a reference we can turn to our core question: what impact will changing the glidepath have on the results? Exhibit 3 incorporates the data in Exhibit 1 (minus the extreme 1% and 99% tails), and has all the same assumptions, but adds conservative and aggressive glidepaths. In the worst-case scenario (the 10% tail), the expected annuity equivalences are \$32,000 per year for the conservative glidepath, \$30,000 per year for the neutral glidepath and \$28,000 per year for the aggressive glidepath. In other words, if markets perform much worse than expected over the course of the participant’s career, investing using our conservative glidepath will provide \$4,000 more per year in income relative to our aggressive glidepath.

As we move through the distribution to more favorable scenarios, we find the crossover point — where the aggressive glidepath begins to outperform the conservative one — is at the 38th percentile. This means that in 38% of the scenarios, the participant would be better off with the conservative glidepath, and in 62% she would be better off with the aggressive.

<sup>6</sup> One half of the results will result in an annuity less than the median, and a half will result in an annuity that is greater.

To reach a sound conclusion, the entire distribution needs to be evaluated using the investor's utility function.

At the mid-point of the range — the median scenario — the aggressive, at an expected \$55,000 per year, is \$3,000 ahead of conservative. The advantage of the aggressive glidepath grows as the scenarios get increasingly favorable, and at the best-case scenario (90th percentile), the aggressive produces an expected \$116,000 annuity equivalence versus \$92,000 per year for the conservative, or a \$24,000 difference.

In reviewing these outcomes, the initial reaction might be that the aggressive glidepath is the clear choice. You come out ahead about two-thirds of the time, and in the best case, you make \$24,000 per year more than the conservative glidepath, while in the worst case, the conservative's advantage is just \$4,000. But as noted earlier, to reach a sound conclusion, the entire distribution needs to be evaluated using the investor's utility function.

In the worst case, when participants' post retirement income is expected to be just about one-third of their \$100,000 final pay, the expected \$4,000 advantage of the conservative glidepath may loom very large. The higher income in bad times may mean more to a conservative participant than the expected \$24,000 per year extra that the aggressive glidepath provides in good times. After all, in the best case, the conservative glidepath would still provide 91% of final pay. If their primary concern is protecting their income in the worst case scenarios, investors may find that the conservative glidepath is the most appealing.

So far, we have considered a relatively straightforward set of assumptions. To approximate real market and investor considerations a little more closely, we also varied three significant assumptions: the expected rate of return and volatility for the stock market, and participant contribution patterns. In each case we evaluate their impact on returns for investors relative to the conservative, neutral and aggressive glidepaths.

### The Impact of Stock Market Rate of Return Expectations

In the "base case," we use the assumption of 5% for the long-term real expected return for the stock market. (Recall that this is the assumption used to develop the 20,000 scenarios under the probability distribution.) What if we use expected return assumptions that are more bullish or bearish? Stated another way, how might our analysis of the three glidepaths change if our outlook for the next 40 years is rosier or more pessimistic than the 5% expected return? Exhibit 4 shows the bear case which assumes the stock market's long-run real expected return is only 3.5%; Exhibit 5 shows the bull case at 6.5%.

When we vary the expected return assumption, the comparison gets more elaborate. For each of the bear, base, and bull long-run stock market expected return assumptions, we illustrate the worst-case, median, and best-case scenarios, as well as the crossover percentile. Fortunately the outcomes have a straightforward logic that builds on the results shown in Exhibit 3. Let's think of the simulations as arranged from worst to best. At one extreme are the worst-case scenarios using the bear market 3.5% expected return assumption. At the other end are the best-case scenarios using the bull market 6.5% expected return assumption. As we move from worst- to best-case scenarios, the aggressive glidepath becomes progressively more attractive. This is as you might expect — as the assumptions underlying the simulations get increasingly bullish, there is less need to be conservative.

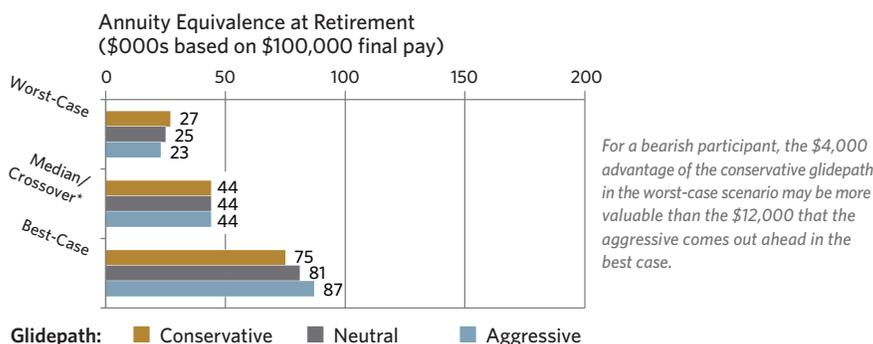
Under any given set of assumptions, the attractiveness of one glidepath over another is subjective, and can only be determined by each participant's risk/reward tradeoff.

Starting with the bear market assumption of 3.5% expected return, in the worst-case scenario the conservative glidepath is expected to provide an annuity of \$27,000 per year, based on \$100,000 per year final pay (Exhibit 4). This leaves one \$4,000 better off than the aggressive glidepath payout in a very difficult economic climate. In the good times, best-case scenario, the aggressive glidepath anticipated payout of \$87,000 per year is \$12,000 greater than the conservative. The crossover point — where the aggressive glidepath begins to outperform the conservative one — is at the 50th percentile, meaning the number of scenarios favoring aggressive or conservative is evenly split.

The base case, 5% stock market expected return assumption, is a reprise of Exhibit 3, so we won't repeat the results, except to point out that compared with the bearish market outlook above, the outcomes tilt towards the aggressive glidepath. The bullish case, 6.5% expected return assumption, produces more favorable outcomes (Exhibit 5). Using that assumption, the aggressive glidepath outperforms 75% of the time. In the worst-case scenario, the payout from the conservative glidepath is \$2,000 more than from the aggressive, but in the best-case scenario the payout from the aggressive is \$40,000 greater — \$156,000 per year versus \$116,000.

We see that the wider range of capital market assumptions (Exhibits 4 and 5) predictably yields a wider range of glidepath outcomes versus the base case (Exhibit 3). For example, in the bear-case with its 3.5% expected return assumption (Exhibit 4), even the conservative glidepath would produce a lower payout than would the worst-case scenario for the aggressive glidepath when we assume a 5% expected return (Exhibit 3). The results underscore two key themes of our study: first, the expected range of outcomes depends critically on market assumptions. Second, under any given set of assumptions, the attractiveness of one glidepath over another is subjective, and can only be determined by each participant's risk/reward tradeoff: "In a worse-case scenario, how much difference will the additional payment mean to me versus the potential upside if things go as well or better than expected?"

**Exhibit 4: Bear Stock Market (3.5%)**

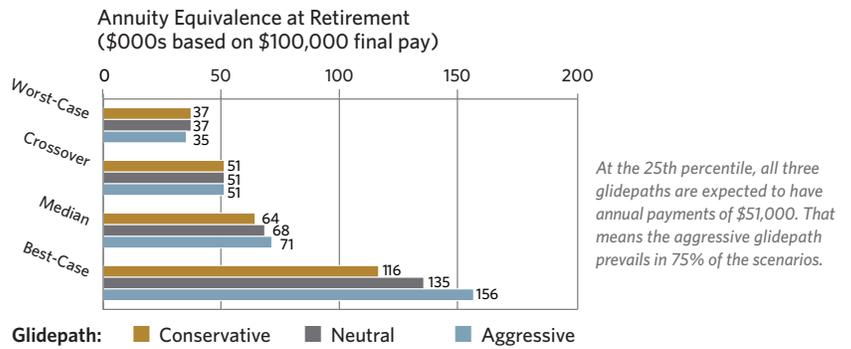


\*The fact that the median and crossover are equal is a coincidence of this assumption.

Source: Mellon Capital Management, July 2009

If we assume lower stock volatility compared with the 18% assumption in the base case, the distribution of outcomes shrinks. The outcomes improve in the worst-case scenarios and shrink in the best-case.

### Exhibit 5: Bull Stock Market (6.5%)



Source: Mellon Capital Management, July 2009

### The Impact of Stock Market Volatility Expectations

Capital market volatility also has an important role in shaping outcomes, especially over a 40-year contribution period. To gauge how volatility may interact with the three glidepaths, we now use stock market standard deviation assumptions of 15% and 21%, and compare them with the 18% used in the base case (the different assumptions are comparable to the historical variations in market volatility). The biggest impact is at the extremes, in the worst- and best-case scenarios.

Not surprisingly, if we assume lower stock volatility compared with the 18% assumption in the base case, the distribution of outcomes shrinks. The outcomes improve in the worst-case scenarios and shrink in the best-case. For example, in the low volatility, worst-case scenario (Exhibit 6), a participant with an aggressive glidepath would be expected to have an annuity equivalent of \$33,000 compared with \$28,000 per year in the base case.

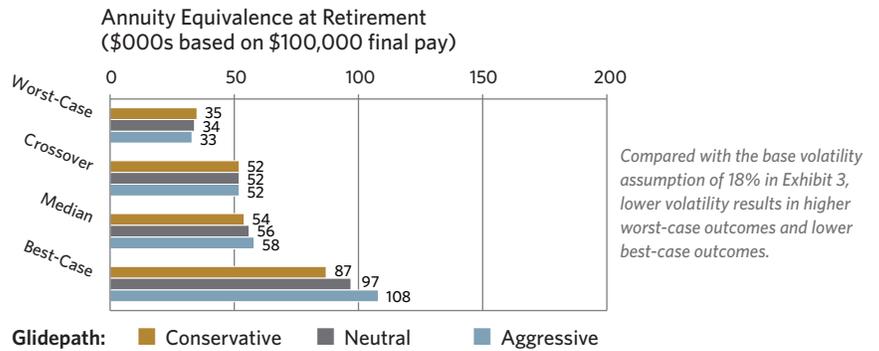
The opposite happens if we employ a higher volatility assumption. Compared with the base case, glidepath outcomes get worse in the worst-case and better in the best-case. For example, in the high volatility, best-case scenario (Exhibit 7), a participant with an aggressive glidepath would expect to have an annuity equivalent of \$122,000 compared to \$116,000 per year in the base case.

Another way to gauge the difference between low- and high-volatility assumptions is to compare the results in the worst-case scenarios (Exhibits 6 and 7). In the low-volatility world (Exhibit 6) the conservative glidepath would be anticipated to produce a payout of \$35,000 per year — \$2,000 per year more than the aggressive glidepath. In the high volatility world (Exhibit 7), in the worst-case scenario all three glidepath payouts shrink, but the advantage of the conservative glidepath over the aggressive grows to \$4,000 per year — \$29,000 per year vs. \$25,000 per year.

This analysis shows that as participants evaluate glidepaths, their views about long-run capital market behavior must include both expected returns and volatility. Higher volatility assumptions amplify the dispersion of results between conservative and aggressive glidepaths.

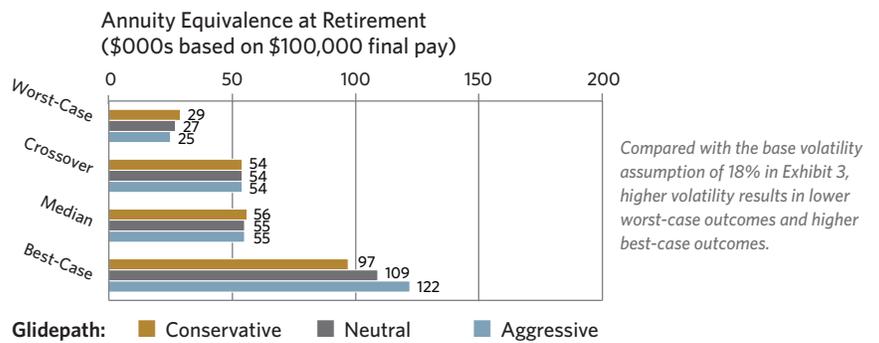
Views about long-run capital market behavior must include both expected returns and volatility. Higher volatility assumptions amplify the dispersion of results between conservative and aggressive glidepaths.

**Exhibit 6: Low Equity Market Volatility (15%)**



Source: Mellon Capital Management, July 2009

**Exhibit 7: High Equity Market Volatility (21%)**



Source: Mellon Capital Management, July 2009

### The Impact of Contribution Patterns

All of the analyses we have considered so far assume that the participant is a “model” contributor: someone who starts early and contributes consistently over the full 40-year horizon. Of course, real-world participant behavior frequently varies from this ideal. Thus, we examine the impact on our results for two other types of participants: the “inconsistent contributor” and “late starter.”<sup>7</sup> For this analysis we use the same expected return and risk assumptions as in the base case.

#### 7 Contribution Pattern Assumptions

**Model participant** Joins the workforce at 25; enjoys real wage growth for most of 40-year career; consistently contributes 9% of her wages; in the last few years of work, wage decreases slightly in real terms.

**Inconsistent contributor** Begins career contributing 6% of her wages for the first seven years; at 32 takes out a \$15,000 loan; at 50 takes out another loan for \$30,000; loans are paid back in three and four years, respectively, but there are “contribution holidays” during those periods; after paying back the second loan, contributions resume at 9%; during the last decade, contributions increase to 12%.

**Late starter** Same earnings pattern as model participant, but begins contributing at 40. Contributes at 12% rate to “catch up.”

Model participants generally can expect to have higher income in retirement than the other participants regardless of the market performance or the glidepath they select.

The first thing to note is that model participants generally can expect to have higher income in retirement than the other participants regardless of the market performance or the glidepath they select (Exhibit 8). This is because contributions started earlier, resulting in more assets invested, as well as more time for capital appreciation. It is interesting to note that because the inconsistent contributor's and late starter's contributions do not have as much exposure to the market as does the model participant's, distinctions between the glidepath outcomes (in any given scenario) are greater for the model participant than for the other two (Exhibit 8).

**Exhibit 8: Range of Outcomes for Different Contributors on 3 Different Glidepaths\***

	Model			Inconsistent			Late Starter		
Worst-Case 10th percentile	32	30	28	27	26	25	26	25	24
Median	52	54	55	42	43	44	37	38	39
Best-Case 90th percentile	92	104	116	70	78	86	56	61	67

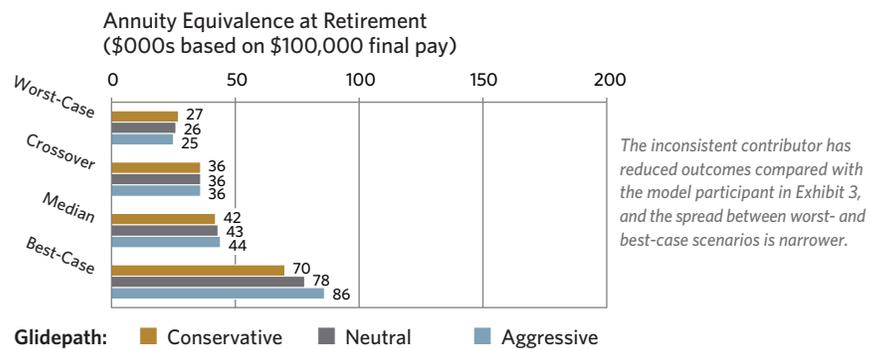
Glidepath: Conservative Neutral Aggressive

\*Annuity equivalence at retirement in \$000s based on \$100,000 final pay.

Source: Mellon Capital Management, July 2009

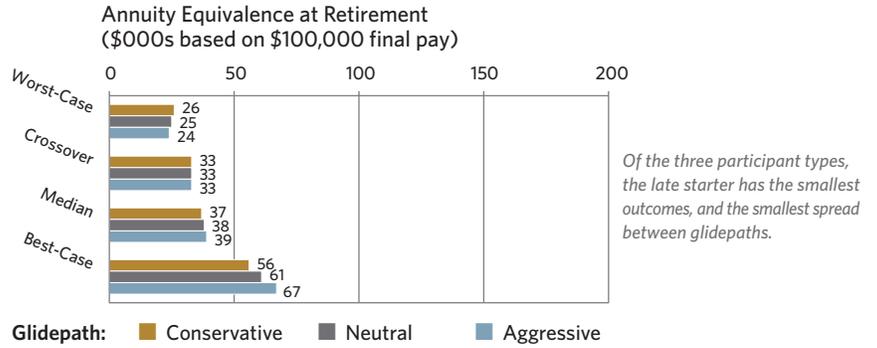
Similarly, for the inconsistent contributor and late starter, the spread between worst- and best-case scenarios is narrower than it is for the model participant (Exhibits 9 and 10, compared with Exhibit 3).

**Exhibit 9: Inconsistent Contributor**



Source: Mellon Capital Management, July 2009

## Exhibit 10: Late Starter



Source: Mellon Capital Management, July 2009

The worst-case scenarios clearly demonstrate the importance of understanding and appropriately weighing the downside risks.

### Limitations of the Analysis

This paper presents the analysis of glide path selection from a highly stylized point of view. It only includes stocks and bonds, and deliberately avoids inclusion of other asset classes such as international stocks, real estate and inflation-adjusted bonds. The number of combinations and permutations would obviously create complexity that would be difficult to characterize in a single study. However, it is fair to assert that the patterns we have observed here are likely to hold, and that the glidepath and appropriate levels of the other assets will similarly depend on assumptions about expected returns, risks and correlations. Our analysis also assumed that the participant's entire investment is annuitized at retirement date. Some target date maturity funds are designed to continue through retirement, and the impact of a post-retirement date glidepath is another dimension for further study.

### Conclusion

The expected range of different outcomes depends critically on assumptions used as inputs. Thus, to properly model the range of glidepath outcomes, and hence the tradeoffs, one should consider capital market risk and return assumptions as well as the likely pattern of participant contributions. Once the likely distribution of outcomes has been modeled, one can make a thorough analysis of the implications of choosing one glidepath over another.

Our research highlights that it is the outcomes in the tails of the distributions of potential outcomes that best illustrate the risk/opportunity tradeoff required to choose among glidepaths. In the best-case scenarios, more aggressive glidepaths have higher average returns, higher probability of success, and perform significantly better.

On the other hand, the worst-case scenarios clearly demonstrate the importance of understanding and appropriately weighing the downside risks. In scenarios in which the stock market performs poorly over the course of the participant's career, even contributions invested according to conservative glidepaths will provide less retirement income than expected. However, it is in these scenarios that conservative glidepaths will provide a cushion relative to more aggressive glidepaths.

We believe a “consensus” glidepath may make the most sense for the great majority of investors. By consensus, we mean a glidepath that is in the middle of those available.

Consider the results, for example, if our model participant regularly contributes 9% of her salary over her entire career, which has the bad fortune to take place over a period of low returns (3.5%) and high volatility (21%). In the 10% tail, worst-case scenario, the ending balance in her account would purchase an annuity that provides only \$24,000 per year (based on \$100,000 final pay). But if she had been on an aggressive glidepath, the annuity would be just 80% of that, or \$20,000 per year. The outcomes in the 1% tail would be even more dramatic. That is the crucial element of the tradeoff: How important is even a modest amount of extra income in a scenario in which retirement incomes will be substantially less than forecast, relative to the extra income in less dire, but more likely scenarios?

### The Case for a Consensus Glidepath

To return to the questions we posed at the beginning: How should one evaluate glidepaths? Which is the most appropriate for the participants in a plan? Our study, with its simplified glidepaths and arbitrary capital market assumptions, illustrates the tradeoffs. It can point us in the direction of how to obtain the answers, but can't take us there. For example, in our volatility analysis, we assumed the base case, 5% expected return. With equal validity, we could have tested a low-expected-return, high volatility scenario (similar to the recent market), that would have skewed outcomes further toward the conservative glidepath. Or vice versa, a high-expected-return, low volatility assumption that would have enhanced the aggressive glidepath. We strove to make reasonable assumptions, but it is not possible to cover all contingencies, reasonable or otherwise.

Thus, we believe that the best guidance for answering the questions posed above has to be grounded in the real-world market realities facing plan sponsors and participants. From that perspective, we believe a “consensus” glidepath may make the most sense for the great majority of investors. By consensus, we mean a glidepath that is in the middle of those available. In our study, the neutral glidepath served that function, based on our understanding of the market at the time, but the consensus, by definition, will change with investor sentiment. Following is our rationale for preferring the consensus:

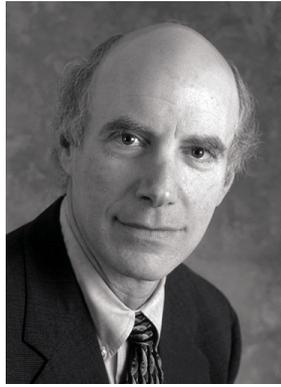
**Choosing is hard:** There are a number of practical hurdles to choosing a particular glidepath as being optimal for your participants.

- You need views on long-term expected returns, risks, correlations and participant contribution patterns. Our belief is that most sponsors are not confident in their long-term views. The dramatic swings of the past decade serve as a reminder of just how volatile the markets can be.
- Glidepaths are complicated. For simplicity, we used a two-asset glidepath of stocks and bonds. In reality, glidepaths include many more asset classes, and the pattern of change between them is complex.

- In order to perform the analysis, for each candidate glidepath you would have to perform simulations such as ours and produce the distribution of potential outcomes. With those distributions, you would have to be able to objectively evaluate the risk-return tradeoffs in order to choose the “ideal” glidepath.
- Lastly, even if you were able to reach this point, the ideal glidepath may not be offered. Instead most sponsors are forced to choose between glidepaths offered by various investment managers. You can’t perform the same analysis with the data they provide. The managers may show you the distribution of results based on their capital market assumptions, but you may not be able to observe them, or apply a standard set of assumptions to the glidepaths of all managers. As a result, the glidepath results will be confounded by different inputs. Thus, making a rigorous and objective decision will be difficult, if not impossible.

**Taking the middle road:** This suggests that there is no way to develop compelling evidence that one glidepath is superior to the others. As a result, we believe that a consensus glidepath is the logical choice. Target maturity fund managers devote significant resources and intellectual capital to developing glidepaths, performing exercises similar to what we outline in our study. Thus, the consensus leverages the collective wisdom of all of the managers — their capital market assumptions, their forecasts of participant behavior, as well as how they evaluate the risk-return tradeoff. A consensus glidepath also reduces the likelihood that the glidepath represents extreme views.

Regardless of the sponsor’s capital market views, or initial inclination towards one glidepath, our core recommendation involves basic due diligence. The choice must be forward-looking. Sponsors involved in selecting target maturity date fund managers should seek to understand the manager’s assumptions, and how the forecast outcomes will vary in different scenarios. Such diligence will help ensure that the target maturity date fund represents the most appropriate choice for the plan participants.



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